



Office of the Vice-Provost and Dean  
Yeates School of Graduate Studies

## **Final Assessment Report and Implementation Plan**

Periodic Program Review (PPR)

**Environmental Applied Science and Management (MAsc, PhD)**

Last Updated: April 6, 2018

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## FINAL ASSESSMENT REPORT

In accordance with the University Institutional Quality Assurance Process (IQAP), this final assessment report provides a synthesis of the external evaluation and the internal response and assessments of the graduate program in **Environmental Applied Science and Management (MASc, PhD)**. This report identifies the significant strengths of the program, together with opportunities for program improvement and enhancement, and it sets out and prioritizes the recommendations that have been selected for implementation.

The report also includes an Implementation Plan that identifies who will be responsible for approving the recommendations set out in the final assessment report; who will be responsible for providing any resources entailed by those recommendations; any changes in organization, policy or governance that will be necessary to meet the recommendations and who will be responsible for acting on those recommendations; and timelines for acting on and monitoring the implementation of those recommendations.

### Executive Summary

The Environmental Applied Science and Management (EnSciMan) Program offers two degrees: a Master of Applied Science (MASc) and a Doctor of Philosophy (PhD). These interdisciplinary programs are for graduate students seeking advanced study in a professionally-based environmental program that provides research in a broad variety of environmental fields. EnSciMan began offering its MASc degree in 2000. It was Ryerson's first independent graduate program. The first cohort of PhD students entered the program in 2009. The MASc and PhD students are now supported by 87 faculty members at Ryerson University. EnSciMan is the only program at Ryerson that includes faculty members from all six of the university's Faculties.

The program has been successful in preparing graduates for professional careers in the environment industry, as well as for doctoral studies. As of June 2016, 260 MASc students have graduated from the program. A total of 10 students have successfully completed their PhD degrees as of June 2016. Based on employment data from 245 graduates of the program, well over 90% are employed in an area related to the environmental sciences and environmental management. EnSciMan graduates are employed in a variety of roles, including as engineers, scientists, executives, managers, coordinators, consultants, analysts, planners, and professors, among many others.

The program has a number of core strengths. The program is unique in its explicit interdisciplinary emphasis on the two fields of environmental science and policy and environmental management. While there are a number of other graduate programs that focus on one of these areas, EnSciMan is unique in that it is explicitly designed to address both. To this end, the program employs a T-shaped curriculum, meaning that students are exposed to a broad range of areas, while also having the ability to specialize in a particular area of interest. The program also has a heavy emphasis on applied research, which is in line with the underlying emphasis on applied research at Ryerson University. The strength of the program's faculty and students has been recognized through a number of individual awards. The program also has a strong history of renewal. The program recently completed a curriculum review to ensure that its offerings remain original and up-to-date.

Despite these strengths, the program does face a number of challenge going forward. Student financial support has been an issue. Levels of stipend support for MASc and PhD students vary widely across the

program. The inability to offer multi-year guaranteed funding packages is also a concern, particularly for PhD students. With a growing number of graduate programs both inside and outside of Ryerson University, the program must become more proactive in attracting talented domestic and international students. EnSciMan also faces challenges in securing the release of faculty members to teach courses in the program. This is particularly important given the recent and impending retirement of several professors with a long history of teaching in the program. Like many interdisciplinary programs, EnSciMan is also challenged due to its lack of dedicated space and different academic cultures, which can result in differing research expectations. These challenges have been recognized in the creation of the developmental plan, which will guide key initiatives over the next 3-5 years.

Notwithstanding these challenges, the EnSciMan program is well positioned for continued success in the coming years. The program has many talented faculty members and students with strong research productivity. Student satisfaction is generally high and employment prospects in environmentally-related fields are bright. In the face of growing competition, EnSciMan remains a unique graduate program. However, the program will need to continue to evolve in the coming years.

### Periodic Program Review and Peer Review Team **Environmental Applied Science and Management (MAsc, PhD)**

The graduate program in Environmental Applied Science and Management (MAsc, PhD) submitted a Self-Study Report to the Yeates School of Graduate Studies that outlined program descriptions and learning outcomes, an analytical assessment of the program, program data including data from student surveys and the standard data packages. Course outlines and CVs for full-time faculty members were also appended.

Two external and one internal arm's-length reviewers were selected from a set of proposed candidates. The Peer Review Team (PRT) for the Periodic Program Review (PPR) of the Master's and Doctoral programs in Environmental Applied Science and Management consisted of Dr. John Robinson (University of Toronto), Dr. Peter Victor (York University), and Dr. Myer Siemiatycki (Ryerson University).

The appraisal committee spent two days at Ryerson. The visit included interviews with the University and Faculty Administration including the Vice-Provost Academic; Vice-Provost and Dean Yeates School of Graduate Studies (YSGS); Associate Dean YSGS, Graduate Program Director of EnSciMan, and meetings with Faculty, a group of current students, and support staff.

The PRT site visit was conducted on May 1 and May 2, 2017. The PRT report was communicated to the Associate Dean, YSGS on May 23, 2017, and the response to the report from EnSciMan was communicated on October 26, 2017.

### Program Strengths, Weaknesses and Opportunities

The PRT commends the program on its thoughtful, comprehensive self-assessment of strengths, weaknesses and opportunities. EnSciMan has considerable strengths, including the uniqueness of the program, reputation, location and the calibre of its faculty, students, and staff. We note as well the program's unique contribution and stature within Ryerson University. After Ryerson was granted full university status, EnSciMan was the first fully 'homegrown, in-house' graduate program launched by the university. It led the way in demonstrating that Ryerson had the capacity to deliver excellence in

graduate education. Many other programs have since followed in the graduate studies path first forged by EnSciMan.

Over time, EnSciMan became disadvantaged by the example of success it modelled. As many more graduate programs arose, typically rooted within an academic department, the 'big tent' of interdisciplinarity lacked the more firm foundations of 'home department' graduate programs. As noted throughout the PPR and the self study report, this entailed less stability of faculty availability, lack of dedicated space, and in some instances students having less access to funding, teaching and research assistance experience because academic departments prioritized students from their own programs. We note as well that University policies seemingly restricting multi-year funding commitment to graduate students, and limiting graduate school admission to one start time in the Fall, are rigidities adversely impacting the program and its students.

EnSciMan is a strong academic program. Given the critical societal, economic and environmental impact of its field, important program opportunities remain – from placing graduates in meaningful careers to keeping the planet suitable for humans and other species. What EnSciMan most needs are innovations in Ryerson's institutional system to better meet its distinct circumstances as an interdisciplinary program.

## Summary of PRT Recommendations with Graduate Program and YSGS Responses

### Academic Recommendations

#### **Recommendation 1: Increase the number of cross-appointed faculty.**

##### **EnSciMan Response**

Agreement. EnSciMan supports the appointment of additional cross-appointed faculty. EnSciMan will work with YSGS to advocate for additional cross-appointed faculty.

##### **YSGS Response**

*YSGS supports the arguments for an increased number of cross-appointed faculty, either through new faculty recruitment or the secondment of existing faculty.*

*YSGS notes that these appointments need to be considered in the context of departmental- and faculty-level planning. The appointment of new faculty is outside of the purview of YSGS.*

*YSGS notes that it submitted a proposal for increased faculty cross-appointments and secondments to the Provost in the Fall 2017 term.*

*YSGS is continuing to work towards increased cross-appointments and faculty secondments for Ryerson's interdisciplinary programs.*

#### **Recommendation 2: Explore the use of faculty secondments.**

##### **EnSciMan Response**

Agreement. EnSciMan supports the use of faculty secondments. EnSciMan will work with YSGS to advocate for faculty secondments.

##### **YSGS Response**

*YSGS supports the use of faculty secondments (i.e., cross-appointments of existing faculty members). Further details are provided in the response above.*

**Recommendation 3: Implement a methods requirement for MASc students.**

**EnSciMan Response**

Taken under consideration. In October 2017, the EnSciMan GPC directed its Admissions and Studies Committee to investigate this issue and develop recommendations.

***YSGS Response***

*YSGS supports the program-level response.*

**Recommendation 4: Broader societal and systems perspective in the curriculum.**

**EnSciMan Response**

Taken under consideration. EnSciMan will further explore these issues as a part of its next curriculum review.

***YSGS Response***

*YSGS supports the program-level response.*

*YSGS will support the program as needed for any minor or major curriculum modifications as per Policy 127.*

**Recommendation 5: Utilize the course substitution process for ES9001 for PhD students who have already completed ES8920.**

**EnSciMan Response**

Agreement. This change has already been implemented for the Fall 2017 term.

***YSGS Response***

*YSGS supports the program-level response.*

**Recommendation 6: Provide explicit guidance for Summer supervision of the program's students.**

**EnSciMan Response**

Agreement. The program plans to implement this requirement for the Summer 2018 term.

***YSGS Response***

*YSGS supports the program-level response.*

**Recommendation 7: Explore the use of blended courses and the creation of a Professional Master's diploma (PMDip).**

**EnSciMan Response**

EnSciMan will also further explore the creation of a PMDip, though the capacity of the program to deliver such a program will depend on the outcome of the cross-appointment and faculty secondment requests.

**YSGS Response**

*YSGS supports the program-level response.*

*YSGS will support the program as needed for any minor or major curriculum modifications, again, as per Policy 127.*

*YSGS will support the program as needed for the consideration of a PMDip, as per Policy 112. As noted by the program, a key consideration will be the capacity of the program to expand its offerings.*

**Recommendation 8: Expand engagement with partner organizations.**

**EnSciMan Response**

Agreement. EnSciMan will explore working with YSGS and the OVPRI to identify additional partnership opportunities.

**YSGS Response**

*YSGS supports the program-level response. YSGS will convene a meeting with the interdisciplinary Graduate Program Directors to discuss how it can support program-level initiatives to expand engagement with partner organizations.*

**Recommendation 9: Move ES8930 (the Master's seminar course) to MASc Semester 2 of Year 1.**

**EnSciMan Response**

Taken under consideration. EnSciMan notes that this will be explored as a part of the review of the methods requirement for MASc students noted above.

**YSGS Response**

*YSGS supports the program-level response.*

**Recommendation 10: Increase cross-listed courses and team teaching.**

**EnSciMan Response**

Open to consideration. EnSciMan will explore these issues as a part of its next curriculum review.

**YSGS Response**

*YSGS supports the program-level response.*

*YSGS will support the program as needed for any minor or major curriculum modifications, again, as per Policy 127.*

**Recommendation 11: Create an External Advisory Council.**

**EnSciMan Response**

Taken under consideration. EnSciMan notes that its many external Associates may already be playing the role contemplated by the Peer Review Team. The program will further consider this issue in a GPC meeting.

**YSGS Response**

*YSGS supports the program-level response.*

**Recommendation 12: Require the formation of MASc committees in Year 1.**

**EnSciMan Response**

Agreement. EnSciMan will implement this requirement by the Spring 2018 term.

**YSGS Response**

*YSGS supports the program-level response.*

**Recommendation 13: Update the program's review of competing programs.**

**EnSciMan Response**

Noted. This will be incorporated into the next curriculum review.

**YSGS Response**

*YSGS supports the program-level response.*

**Recommendation 14: Reword program documentation to better reflect breadth of the environmental sector.**

**EnSciMan Response**

Noted. EnSciMan will take this into account in the development of any marketing materials going forward.

**YSGS Response**

*YSGS supports the program-level response.*

*YSGS will also convene a discussion with the interdisciplinary Graduate Program Directors at Ryerson to explore how it can support program-level marketing efforts.*

Administrative and Financial Recommendations

**Recommendation 15: Explore creating a Council of Deans to coordinate engagement in EnSciMan.**

**EnSciMan Response**

Agreement. EnSciMan supports the creation of a Council of Deans to support the program. EnSciMan will work with YSGS on this issue.

**YSGS Response**

*YSGS notes that faculty Deans already meet on a regular basis. Issues pertaining to the interdisciplinary programs are discussed as a part of these meetings.*

**Recommendation 16: Extend multi-year funding commitments to students.**

**EnSciMan Response**



Agreement. EnSciMan supports the implementation of multi-year funding agreements for its students. EnSciMan will work with YSGS to continue to advocate for multi-year funding commitments in its offer letters

**YSGS Response**

*YSGS supports the principle of multi-year funding commitments. It notes, however, that the ability to authorize multi-year funding commitments is outside of its purview. YSGS will continue to advocate to the Provost for consistency in strong funding packages for graduate students.*

**Recommendation 17: Make strong efforts to increase student funding.**

**EnSciMan Response**

Agreement. EnSciMan supports efforts to increase funding levels for its students and will continue its efforts in this area.

**YSGS Response**

*YSGS supports the principle of increasing student funding levels.*

*YSGS notes that funding provided to the program through Ryerson Graduate Fellowships (RGFs) is consistent with that provided to other interdisciplinary programs at Ryerson.*

*YSGS notes that most GA positions are controlled by departments and other faculties at Ryerson. YSGS also notes that it does provide financial support for interdisciplinary GAs, including for EnSciMan.*

*YSGS also encourages the program to explore increases to other sources of funding, including external scholarships and stipends from faculty supervisors.*

**Recommendation 18: Establish common EnSciMan space.**

**EnSciMan Response**

Agreement. EnSciMan supports the establishment of common space for its students. EnSciMan will continue to work with YSGS on this issue.

**YSGS Response**

*YSGS supports the program-level response.*

*YSGS notes that 111 Gerrard was recently renovated. EnSciMan students do currently have access to the facility, including a large open area, 8 desks assigned to EnSciMan PhD students, and a kitchen. The space at 111 Gerrard is also available to the students of other interdisciplinary programs. YSGS notes that EnSciMan students also have access to study space in the Student Learning Centre (SLC).*

*The assignment of new space is outside the purview of YSGS. YSGS does, however, strongly support the establishment of new dedicated facilities for the interdisciplinary programs, such as program administrative offices, individual and collaborative work spaces, and seminar rooms.*

*YSGS has developed a proposal for dedicated space for EnSciMan and the four other interdisciplinary programs at Ryerson. This proposal has been presented to the Provost in the Fall 2017 term. YSGS is continuing to work towards increased space for Ryerson's interdisciplinary programs.*

**Recommendation 19: Consolidation of GPD and GPA offices in the same building.**

**EnSciMan Response**

Agreement. EnSciMan supports consolidating the program offices. This should be considered as a part of the effort to establish common program space

**YSGS Response**

*This issue has been considered as a part of the proposal to the Provost for increased space for the interdisciplinary programs, including EnSciMan. Space for GPA offices has been considered as a part of this proposal. YSGS notes, however, that its primary focus is on securing additional space for interdisciplinary students.*

**Recommendation 20: Increase the emphasis on events and communication.**

**EnSciMan Response**

Agreement. This will be part of ongoing efforts by the program, particularly the GPD.

**YSGS Response**

*YSGS supports the program-level response.*

**Recommendation 21: Implement stable Library funding.**

**EnSciMan Response**

Support. EnSciMan supports stable funding for the library, though it notes this is beyond its ability to address.

**YSGS Response**

*YSGS supports the program-level response, though it also notes that library funding issues are outside its purview.*

## Implementation Plan

## Academic Recommendations

PRT Recommendation	Proposed Action	Responsibility to Lead Follow Up	Timeline for Addressing Recommendation
Increase the number of cross-appointed faculty.	YSGS has submitted an application for increased faculty cross-appointments and we await a decision. The GPD has been in communication with the Associate Dean during Fall 2017 to discuss priority hires. If the proposal is effective, the program will work with the Dean's office, and the relevant academic departments to establish a recruitment and hiring process	Graduate Program Director, Ryerson EnSciMan Graduate Program	This is dependent upon the timing of a decision (regarding the proposal put forward by YSGS). If approved, the program anticipates a hiring process beginning Fall 2018 at earliest. If multiple cross-appointed hires are approved, these hires may be staggered over more than 1 year.
Explore the use of faculty secondments.	Action on secondments will be decided, pending the decision on the YSGS proposal (see above)	Graduate Program Director, Ryerson EnSciMan Graduate Program	The timeline is contingent on the timeline of a decision on the YSGS proposal
Implement a methods requirement for MASc. students.	Currently, we are surveying MASc students to determine appetite and what they would wish to see in such a course. We will offer initially as a Special Topics course to allow refinement, ultimately embedding as core curriculum	EnSciMan Admissions and Studies Committee – chaired by GPD	Course is to be developed deliberately in 2018-2019, and offered as a Special Topics course in Fall 2019; expected to become a core course in 2020-2021
Broader societal and systems perspective in the curriculum.	Initiate a new mid-PPR curriculum review to consider this, among other curriculum matters	EnSciMan Admissions and Studies Committee – chaired by GPD	Beginning Spring-Summer, 2018
Utilize the course substitution process for ES9001 for PhD students who have already completed ES8920.	This is now being done	EnSciMan GPA initiates, approved by GPD	Completed Fall 2017

PRT Recommendation	Proposed Action	Responsibility to Lead Follow Up	Timeline for Addressing Recommendation
Provide explicit guidance for Summer supervision of the program's students.	EnSciMan Admissions and Studies Committee is discussing introducing a new milestone requiring students to have established a committee, and to have provided the committee a draft proposal at end of Winter term, first year. Needs approval of program council	EnSciMan Admissions and Studies Committee – chaired by GPD	Have proposal ready for discussion next Program Council meeting, implementation Winter 2019.
Explore the use of blended courses and the creation of a Professional Master's diploma (PMDip).	The program will await the outcome of the proposal regarding cross-appointments, which is necessary to provide the capacity	EnSciMan Admissions and Studies Committee – chaired by GPD	Of the actions discussed on this list, the creation of the PMDip has relatively low priority. There is no established timeline, but we will discuss the option in Program Council to explore the appetite within the program.
Expand engagement with partner organizations.	Establish conversations with interdisciplinary research centres to better explore opportunities for engagement. Many of the EnSciMan members are actively engaged in one or more of these centres	EnSciMan Program Membership Committee – chaired by GPD. The GPD will continue to have discussions with executives of research centres to determine where EnSciMan can integrate with those centres.	ongoing
Move ES8930 (the Master's seminar course) to MASc. Semester 2 of Year 1.	In 2018-2019, the course will be offered to 2 <sup>nd</sup> year students in Fall semester, and to first year students in Spring	GPD, with support of Admissions and Studies Committee	2018-2019 academic year

<b>PRT Recommendation</b>	<b>Proposed Action</b>	<b>Responsibility to Lead Follow Up</b>	<b>Timeline for Addressing Recommendation</b>
Increase cross-listed courses and team teaching.	We have provided a letter of support for a new graduate program in Occupational Health and Safety that would involve cross-listing of several EnSciMan courses	GPD, in concert with GPDs of other graduate programs	ongoing
Create an External Advisory Council.	Bring forward for discussion at next Program Council meeting	GPD	Fall, 2018
Require the formation of MASc. committees in Year 1.	Implement, pending approval of Program Council	GPD, with support of Admissions and Studies Committee	Implementation for 2018-2019 academic year
Update the program's review of competing programs.	Revisit curricula of competing programs, updating previous review	GPD, with support of Admissions and Studies Committee	Spring – Summer 2018
Reword program documentation to better reflect breadth of the environmental sector.	This will be done as part of updating content and structure of our materials, particularly optimizing for phone browsing	EnSciMan Admissions and Studies Committee – chaired by GPD	Summer, 2018

Administrative and Financial Recommendations

<b>PRT Recommendation</b>	<b>Proposed Action</b>	<b>Responsibility to Lead Follow Up</b>	<b>Timeline for Addressing Recommendation</b>
Explore creating a Council of Deans to coordinate engagement in EnSciMan.	Discuss further with YSGS the mechanism for bringing matters specific to EnSciMan to this council's agenda	GPD – in conversation with YSGS Dean and Associate Deans	Spring, 2018
Extend multi-year funding commitments to students.	Maintain conversation with YSGS to consider options	GPD – in conversation with YSGS Dean and Associate Deans	ongoing

PRT Recommendation	Proposed Action	Responsibility to Lead Follow Up	Timeline for Addressing Recommendation
Make strong efforts to increase student funding.	Continue conversations with departments regarding commitments of RA and GA positions for EnSciMan. Engage with Deans, perhaps through Council of Deans or individual meetings, support for fourth year PhD students.	GPD, YSGS Associate Deans	ongoing
Establish common EnSciMan space.	While this is outside the purview of the program, we will continue conversations with University space planning regarding initiatives to find space suitable for co-housing all EnSciMan students	GPD, in conversation with YSGS Associate Deans and Space Planning	ongoing
Consolidation of GPD and GPA offices in the same building.	No action to be taken at present. We await an outcome of the proposal currently under consideration	GPD will remain in conversation with YSGS Associate Deans regarding this proposal	unknown
Increase the emphasis on events and communication.	We are in conversation with students regarding, not only the nature of events, but what factors will increase participation, to avoid the disappointing outcome of past initiatives; explore cohosting events with interdisciplinary research centres	GPD, in conjunction with executives of interdisciplinary research centres	ongoing
Implement stable Library funding.	No direct action to be taken, maintain dialog with resource librarians	EnSciMan Admissions and Studies Committee – chaired by GPD	ongoing

A report on the progress of these initiatives will be provided in the Follow-up Report which will be due in one year from the date of Senate approval.